



The Times.



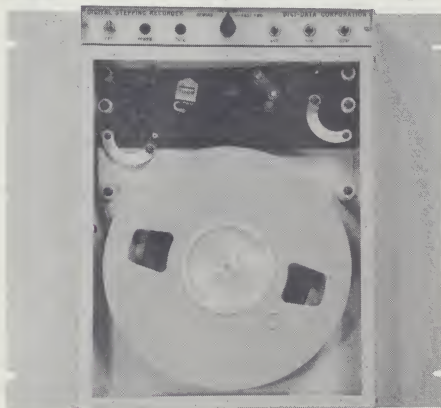
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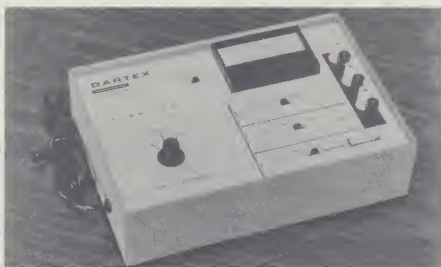
TAPE PREPARATION COST REDUCED BY DIGI-DATA INCREMENTAL STEPPERS

Digi-Data Corporation, leading manufacturer of incremental digital magnetic tape transports, now offers a wide variety of field tested computer compatible units at prices that are a fraction of conventional continuous machines that require buffers for writing formatted tapes.



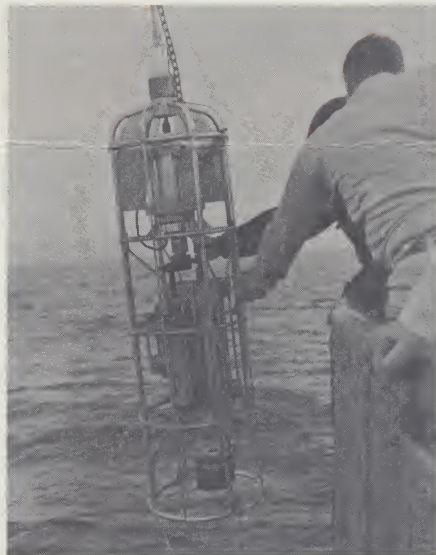
Three basic models are available:
Model 1420 for 0 to 200 steps/sec.
Model 1430 for 0 to 300 steps/sec.
Model 1440 for 0 to 400 steps/sec.
(Continued on page 2)

DARTEX SKEWMETER GIVES DIRECT PERCENTAGE READING OF TAPE GUIDING ACCURACY



Accurate and convenient measurement of tape skew permits rapid determination of tape transport performance using the new Dartex SKEWMETER illustrated. Skew is read directly as a percentage of bit spacing. The unit sells for \$595 and is applicable to all magnetic tape formats.

New Depths for Data



BISSETT-BERMAN SYSTEMS MEET GROWING DEMANDS FOR OCEAN DATA COLLECTION

The ocean's depths are becoming an increasingly important source of data and The Bissett-Berman Corp. offers a wide variety of state-of-the-art instruments and systems for accurate data acquisition in this rapidly expanding field of technology.

Shown above is the sensor portion of a completely integrated, seaworthy assembly of equipment for obtaining accurate and continuous profiles of basic ocean properties, either on station or underway. Salinity, temperature and, optionally, sound velocity are presented as functions of depth.

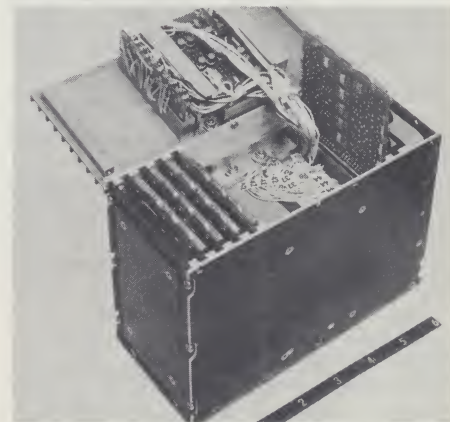
Equipment contained in the "fish" converts sensed parameters into analog frequencies using the Bissett-Berman PARALOC oscillators. A composite fm signal is transmitted via a single-conductor sea cable to deck equipment for demultiplexing, quick-look monitoring, recording (see page 4) and fm-to-digital conversion for computer processing.

The 9006 S/T/D (salinity, temperature, depth) system is just one of many B-B data systems currently in use at leading oceanographic research centers throughout the world.

SANDERS CORE MEMORY STORES 4K 24-BIT WORDS IN 100 CUBIC INCHES

Sanders Associates, of Nashua, N. H., has appointed Wild & Associates as field engineers for militarized core memory systems.

Included in the state-of-the-art designs being offered is the incredible 4K x 24 2.2 microsecond coincident current core



system illustrated. The system employs monolithic circuits where practical and multilayer boards for high reliability and packing density. Access time is 0.6

(Continued on page 2)

33 - MSEC BUFFER BY DDI STORES UP TO 66,000 BITS FOR DISPLAY APPLICATIONS



Less than 2¢ per bit is the cost of data storage in a 33-msec, 2-mc delay line buffer offered by Digital Devices, Inc., primarily for 30-frame-per-second refresh rate display applications. Card on front interfaces buffer electronics with MECL, DTL, RLT, TTL and other micrologic.

AIRBORNE TAPE UNIT RECORDS DIGITAL DATA INCREMENTALLY ON REMOVABLE CARTRIDGES

Lufkin Research Labs has announced the availability of the new R34 incremental magnetic tape recorder for airborne applications requiring extremely small size and high reliability for airborne applications.

The R34 is a record only unit that records 7-bit parallel characters in 50-character frames, 150 frames per cartridge with 1" gaps between frames. Data thus acquired are later converted



Lufkin airborne incremental recorder

to computer format on the ground by the Lufkin TC-19 tape converter.

The tiny recorders operate entirely from ± 6 volts dc and accept 0 and +4 to +6 volt logic levels at rates as high as 30 characters per second. Dimensions are $6\frac{1}{2}$ " x $6\frac{1}{2}$ " x 5". Weight is 7 lbs.

The Lufkin recorders conform to applicable portions of MIL-E-5272 and the FAA Environmental Specification for humidity, shock, RFI, explosion proofing, fungus, vibration and salt spray. Altitudes to 100,000 feet are acceptable.

DIGI-DATA (Continued from page 1)

Each model can be provided for vertical rack mounting, or horizontal rack mounting in a convenient portable carrying case. Both 200 and 556 bit per inch formats can be recorded.

Any of the above configurations write 7-track IBM format on $10\frac{1}{2}$ " reels. Provisions are made for selectable odd or even parity generation, IRG generation with automatic LRCC and EOF gap and check character. In addition tape load point positioning (switch advances reflective load point strip 3.4 inches beyond record head) and EOT sensing are standard features. To ensure proper operation, head currents are checked for both odd and even parity while recording.

Options include complete remote operation, continuous run read-back, ac/dc operation, non-standard tape widths and bit spacing and special designs for unusual environments.

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CAM-OPERATED SWITCHES ON NEW ROYAL TAPE UNITS SIMPLIFY SYSTEM DESIGN

Royal has announced a new series of paper tape readers and punches derived from the famous 500 series by adapting a single revolution clutch to the input shaft.

The Series 200 punch operates in the forward direction and will perforate oiled or dry paper, mylar/foil/mylar and paper/mylar/paper tapes at 20 characters per second.

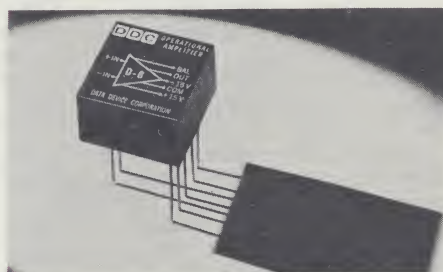
The Series 200 reader is a pin-sensing wire-contact reader designed to read paper or mylar tapes in the forward direction, also at 20 characters per second. Like the 500 series, the new reader features semi-automatic feed for optimum ease and speed of loading perforated tape.

On both units, five optional cam-operated timing switches are available to control the input shaft clutch, interrogate reader code contacts and to provide timing signals for the user's external equipment. The cams are connected directly to the input shaft and are driven at 1400 rpm.

D-8 OPERATIONAL AMPLIFIER FEATURES HIGH PERFORMANCE AT EXCEPTIONALLY LOW COST

Data Device Corp. just can't seem to make a "cheap" operational amplifier! They offer a variety of *low cost* units, but their performance invariably exceeds expectations and competes favorably with higher-priced competitive amplifiers.

Typical is the D-8 whose specifications have recently been raised after production and field usage of thousands of this popular model. Open loop dc voltage gain is 86 db minimum and 90 db typical. Frequency for full output is typically 20 kc and unity gain can usually be achieved as high as two megacycles. Your *Wild* man will supply complete specs and prices on request.

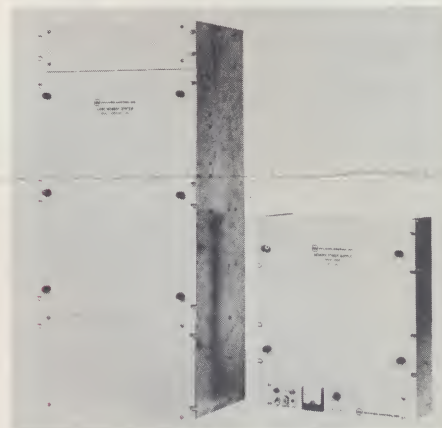


Low cost, high performance D-8 op amp

VersaLOGIC CORE MEMORIES PROVIDE MODULAR APPROACH TO LARGE 2-USEC SYSTEMS

Proof of Decision Control's incomparable versatility in the high-speed, coincident-current magnetic core memory field is illustrated by the 0.5 megabit system shown below. This 2-microsecond system stores 16,384 words of 32 bits and conforms to a special customer requirement of limiting the depth to less than 14".

In actual tests, under subtropical conditions of condensation and fungus, the



16K x 32 2-usec memory and power supply

system exceeded specs by operating at 50°C with a 1.6-microsecond full cycle time and 600 nanosecond access time.

The specially packaged memory is a version of the versatile VersaLOGIC memory system which employs discrete component electronics to complement Decision's integrated circuit VersaSTORE systems. The latter also feature 2-microsecond cycle times and are available for rapid delivery in sizes up to 4096 words of 24 bits.

Memories of larger size can be fabricated by combining the basic modules of the two Decision Control systems.

SANDERS (Continued from page 1)

to 0.8 usec, and half cycle time for read only or write only is 1.2 usec.

The tiny 5.5 pound memory system has an operating life of 5000 hours and is expandable to 40 bits per word. Provisions are made for using the memory as a 4K module for expanding to 32K words.

The 100,000 bit memory occupies only $5\frac{1}{2}$ " x 7" x $3\frac{1}{4}$ ", or 1000 bits per cubic inch! Designed to airborne military specifications, the unit has an operating temperature range of -55°C to +125°C and can be stored from -62°C to +125°C. It can be operated with complete reliability at altitudes as high as 70,000 feet and under 25 G shock. Vibration specs are 5 to 14 cps at 0.3" double amplitude, 14 to 56 cps at G's, 56 to 250 cps at 10 G's and 250 to 2000 cps at 4 G's.

ABACUS EXPANDS "I" SERIES, ADD BI-DIRECTIONAL COUNTERS, 2 + 4 BIT SHIFT REGISTERS

Abacus has announced the arrival of two new members of its "I" series module family. The newcomers feature interconnected IC's for even further simplification of system fabrication by providing pre-wired configurations of commonly-used system functions.

The IS-2 contains six J-K flip-flops connected as two independent shift registers, one of 4 bits and the other of 2 bits. Each circuit is direct coupled to the next and all are independent of capacitors, propagation delays or charge storage devices to achieve reliable settings. These circuits may be connected in a variety of combinations to create highly-versatile shift registers with a minimum of wiring.

The IB-1 contains all of the gating necessary for a 4-bit BCD bi-directional synchronous counter. In addition, it contains one 3-input OR gate. The minimum dc noise margins are 600 mv and 800 mv for 0 and 1 respectively.

Abacus pioneered the manufacture of IC modules and today offers the broadest line available with both TO-5 and flat pack versions available at prices only slightly higher than those normally charged by circuit manufacturers for the IC's only but with the invaluable advantages of packaging and wiring ease without sacrificing reliability or component density.

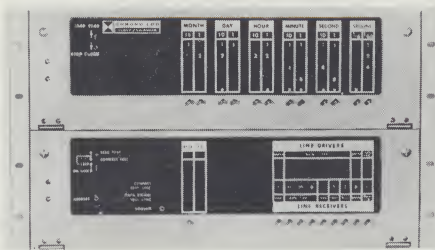
CALMA 'DIGITIZER' CONVERTS GRAPHIC DATA TO MAG TAPE FOR FAST COMPUTER ENTRY

Many Wild & Associates customers had the privilege recently of seeing the fabulous Calma Model 302 "Digitizer" in action during its recent demonstration tour through the northeastern states. As a result of the tour, which began from California last November, all current production has been absorbed. However delivery of units ordered in the near future is still good due to Calma's "productionized" design.

The 302 digitizer graphic data in 0.01" increments in both X and Y directions and records the data on computer-compatible 566-bpi magnetic tape. Numerous operating features include manual tracing speeds up to 125 inches per minute with automatic error alarm whenever the maximum rate is exceeded. Provisions are made for entering digital data manually by means of a convenient pushbutton keyboard. Longitudinal and lateral parity insertion is automatic and the incremental magnetic tape transport supplied with the unit is compatible with IBM type EOT and BOT conventions.

The 302 is ideally suited to any application requiring high-speed conversion of graphic data to digital form for computer analysis.

Chrono-Log CDC-2



CHRONO-LOG INTRODUCES PROGRAMMABLE CLOCKS FOR CDC COMPUTERS

A real-time programmable Clock/Calendar can now be provided by Chrono-Log for use with any CDC computer using the CDC 3000 Input/Output channel. The Model CDC-2 plugs directly into the 3000 I/O and allows the computer program to read the date and time of day to the nearest 1/60th second into memory under program control.

Installation of the Clock/Calendar requires no computer wiring changes. Up to six other devices can share the I/O channel with the Chrono-Log system.

As with all Chrono-Log programmable computer clocks, this unit allows automatic job sequencing on the computer by means of a monitor program. Accounting and billing for computer time on each job can be done automatically by the computer without need for operator intervention of logging. Accurate records can be maintained. Lost time between jobs is eliminated.

The CDC-2 is priced at \$3400.

Chrono-Log also offers a complete line of electromechanical and solid state digital clocks plus a series of low-cost high-quality time code generators and readers to any commonly-used format.

MAC SERIES A157 TAPER PINS PERMIT USE OF MIL-T-22520 CONTROLLED CRIMPING TOOL

Mac Panel Co. plugboard programming systems are widely used in data acquisition and processing systems to provide fast, low-resistance, high-reliability changes in circuit networks.

The Series A157 taper pins, used to effect connections from external equipment to the programming system, are designed on guidelines furnished by MS-3190 for applications calling for rigidly-controlled crimping action. Crimping may be accomplished by any tool meeting the requirements of MIL-T-22520, and pins are available for solid or stranded wires from 16 to 24 AWG.

Mac manufacturers a wide variety of plug-board programming systems with many combinations of materials and mechanical features. Either gold or nickel conductors with phenolic or diallyl phthalate boards are available.

RADIATION INC. ANNOUNCES ANALOG TO COMPUTER TAPE DATA SYSTEM FOR \$11,950

Radiation Inc. continues on in its determination to provide high-performance low-cost data acquisition systems to the instrumentation industry.

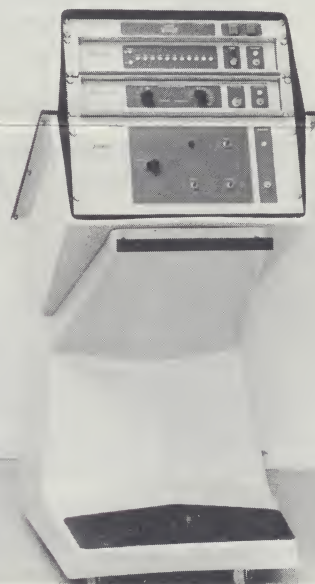
Latest off-the-shelf system by Radiation is the Model 5015 Data Logging System which multiplexes 16 analog channels, converts analog information into 12 bit binary numbers, formats the information into computer compatible form and records the information on magnetic tape ready for computer entry.

The 5015 includes a flexible programmer with an input patch board and provisions for expanding to 64 channels. It records gapped binary 200 bpi 7-track tapes with asynchronous sampling rates of up to 100 samples per second and synchronous rates to 500 samples per channel, or 31.25 samples per channel per second using 16 channels.

The 5015's converter, multiplexer and programmer are capable of 50,000 samples per second with substitution of a higher speed tape transport.

Sample-and-hold aperture time is 100 nsec. Gaps are created by interrupting data transfer. Upon receipt of EOR command, the recorder steps 4 tape character spaces, writes the longitudinal parity character, the 3/4" IRG and then begins another data record. On receipt of a manual stop command the system continues to run until the record in process is complete, then writes an EOF gap.

Accuracy of the system is 0.025% full scale. The system comes complete with a Digi-Data Model DSR 1420 magnetic tape recorder.



Radiation's 5015 data acquisition mounted in mobile cart for convenient movement to where the data is. Tape transport is external.

WINSTON TAPE UNITS RECORD ANALOG DATA 'WITHOUT ELECTRONICS'

Record electronics in the normal sense are completely eliminated from a high-performance analog magnetic tape recording system recently announced by Winston Research Corp. Quantity price will be as low as \$15,000!

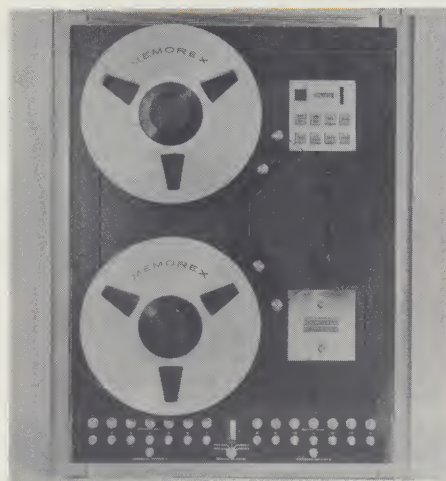
The W-7000 series uses a unique record head design which accepts a 1-volt rms input from a 91-ohm unbalanced line and provides accurate recording on 7 or 14 channels using 1-inch instrumentation tape on 10½" with NAB hubs for more than one hour of recording time at 15 ips (4600 feet of tape).

The new recorder is intended for general purpose instrumentation use. Flutter is 0.4 percent peak-to-peak at 15 ips over a bandwidth from dc to 2.5 kc.

Elimination of record electronics improves recorder reliability and simplifies operation. Harmonic and intermodulation distortion was less than 55db on all tracks of the standard 14-track IRIG system during a recent demonstration.

The most significant characteristic of the new record head, aside from the simplicity in associated circuitry, is its capability to record with lower distortion figures than conventional heads,

Winston W-7000



and with less variation in distortion as the data frequency is varied. This results in a 10 db improvement in second and third harmonic distortion and up to 15 db improvement in signal to noise.

The new head has an interface depth that is three times that for a conventional head, with resultant increase in head life. Predicted MTBF for the complete recorder is 2650 hours. The standard unit is supplied with two channels of welded reproduce electronics for on-site monitoring.

STRIP REGISTER CAPACITY EXPANDED TO ONE KILOBIT; BIT PRICE DROPS BELOW 50¢

Non-volatile thin-film shift registers operating at bit rates from 0 to 1 mc can now be supplied by the Thin Film Labs of Interstate Electronics for as little as 20¢ per bit. This radically improved price per bit figure is made possible by simplified time sharing and data mixing and conditioning in the thin-film domain, together with refined production techniques that allow more information to be recorded per square inch of magnetic material surface.

The IEC Strip-Register records by magnetizing discrete areas of continuous films of magnetic material deposited in strips on glass substrates similar in size and appearance to conventional microscope slides. Information is shifted from input to output by properly positioned and timed current pulses that cause the domain walls of recorded bits to propagate along the surface of the material at approximately 5000 miles per hour.

Interstate pricing is affected by speed, capacity and interfaces. In the near future 1000-bit registers will be offered with basic electronics, and in reasonable quantities, for prices well below less reliable and volatile devices.



200 MICHAEL DRIVE
SYOSSET, L.I., N.Y.

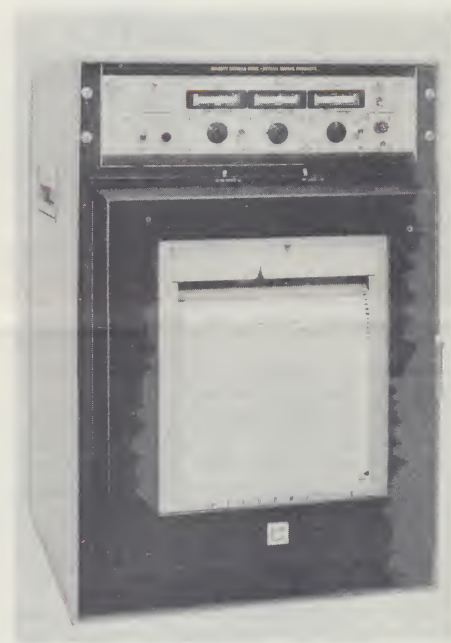
Phone: 516-921-7100
TWX: 516-921-7178

EQUIPMENT AND SYSTEMS FOR INSTRUMENTATION, CONTROL AND DATA PROCESSING

Engineering Representatives for

- ABACUS — Integrated circuit digital modules
- BISSETT-BERMAN — Oceanographic instrumentation equipment
- CALMA — Graphical data digitizers
- CHRONO-LOG — Digital clocks, time code equipment
- CORNING — Glass delay lines, memory systems
- DARTEX — Digital magnetic tape data systems
- DATA DEVICE — Operational amplifiers, power supplies
- DECISION CONTROL — Coincident current core memories, modules
- DIGI-DATA — Digital magnetic tape stepping recorders
- DIGITAL DEVICES — Magnetostrictive delay lines, memory systems
- FAIRCHILD WINSTON RESEARCH — Wideband analog tape recorders, systems
- INTERSTATE ELECTRONICS — Thin film Strip Register memories
- LUFKIN — Cartridge tape recorders, format converters
- MAC PANEL — Plugboard programming systems
- McKEE AUTOMATION — X-Y switches, Loc-Reed switches
- RADIATION — Analog/digital converters, multiplexers, modules
- ROYAL — Paper tape punches, readers, duplicators, verifiers
- SANDERS ASSOCIATES — Militarized memory systems

Talks to 'Fish'



Topside portion of Bissett-Berman S/T/D oceanographic data acquisition system (see page 1) provides accurate and continuous records. Data can be digitized for computer analysis.

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